



Clear Real Estate Holdings Limited

NOISE IMPACT ASSESSMENT OF A PROPOSED RESIDENTIAL DEVELOPMENT AT ADAMSTOWN, CLONBURRIS, CO. DUBLIN.

604498 (02)

JANUARY 2023



EXECUTIVE SUMMARY

RSK Ireland Limited (RSK) was instructed by Clear Real Estate Holdings Limited to conduct a noise impact assessment and Acoustic Design Statement (ADS) in respect of the proposed Residential Development at Adamstown, Clonburris, Co. Dublin. This report has been prepared following a request for an assessment to address the noise impact of the existing road and rail sources on the proposed development.

Baseline noise measurements were conducted, in accordance with ISO 1996-2:2017, at a location representative of proposed development facades most exposed to road/rail noise. Measurements were taken by RSK in January 2023.

In conducting this review, reference is made to industry standard guidance including *The Professional Guidance on Planning & Noise* (ProPG), May 2017, BS 8233: 2014 *Guidance on sound insulation and noise reduction for buildings* (as referenced in the SDCC NAP) and BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.

The site noise survey has been used to assess the sites noise risk categories, as per the ProPG “Stage 1” assessment. The ProPG noise risk categories for the facades most exposed to traffic noise are as follows:

Daytime: **Low to Medium** Night-time **Medium**

Recommendations to mitigate noise emissions, as specified in the “Stage 2” Acoustic Design Statement, include the following:

- Provision of glazing with the minimum sound insulation properties as outlined below:

Table ES1 Glazing Acoustic Specification (Ref. Figure 9)

Specification (Ref. Figure 9)	Sound Reduction Performance Requirements (dB) in Octave Frequency Bands (Hz)						Overall dB R _w
	125	250	500	1k	2k	4k	
Zone A (Red)	29	32	41	40	41	55	41
All other facades	21	20	31	37	35	40	34

- Provision of acoustic attenuation to ventilation systems to all Living rooms and Bedrooms in Zone A, whereby a minimum acoustic performance of 41 dB D_{ne,w} shall be provided, with the vent in the open position

In addition to the above, noise criteria for building services plant, should any be required to service the proposed new development, has been set in accordance with BS 4142:2014+A1:2019 and with consideration of the measured baseline noise levels at the site boundary.

In summary, it is considered that the site is suitable for a residential development, subject to the provision of the noise control recommendations outlined in this report. The specific glazing and ventilation arrangements will be agreed post-planning, and will comply with the performance requirements outlined in this report.

Typical Planning Conditions, that may be applied to the development, to ensure to ensure future residents are not adversely impacted by noise, are as follows:



- Appropriate design/mitigation measures shall be incorporated into the proposed development to ensure suitable internal and external noise levels will be achieved.
- Internal noise levels within residential dwellings shall comply with the values outlined in BS 8233 (2014) *Guidance on sound insulation and noise reduction for buildings*.
- External amenity areas, where daytime noise levels do not exceed the range 50 – 55 dB $L_{Aeq,16hr}$, shall be incorporated into the proposed development design, for use by residents.
- Plant noise from the proposed development shall not cause adverse impact, when rated in accordance with BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.



RSK GENERAL NOTES

Project No.: 604498 (02)



Title: Noise Impact Assessment of a Proposed Large-Scale Residential Development at Adamstown, Clonburris, Co. Dublin.

Client: Clear Real Estate Holdings Limited

Date: 31st January 2023

Office: Dublin

Status: FINAL

Author	James Mangan, MIOA Associate Director (Acoustics)	Technical reviewer	Aarron Hamilton, AMIOA Acoustic Consultant
Signature		Signature	
Date:	31 st January 2023	Date:	31 st January 2023

RSK Ireland Limited (RSK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and RSK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by RSK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of RSK and the party for whom it was prepared.

Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

This work has been undertaken in accordance with the quality management system of RSK Ireland Ltd.

RSK Ireland Ltd. Bluebell Business Centre, Old Naas Road, Bluebell, Dublin 12

CONTENTS

EXECUTIVE SUMMARY	3
1 INTRODUCTION	1
2 THE SITE	2
3 NOISE CRITERIA	4
3.1 Dublin Agglomeration Environmental Noise Action Plan (2018 – 2023): Volume 4, South Dublin County Council	4
3.2 ProPG: Professional Practice Guidance on Planning and Noise for new Residential Development.....	5
3.2.1 ProPG and BS 8233 <i>Guidance on sound insulation and noise reduction for buildings</i>	6
3.2.2 ProPG and BS 4142 <i>Methods for rating and assessing industrial and commercial sound</i>	7
4 BASELINE NOISE SURVEY	8
4.1 Monitoring Locations	8
4.2 Survey Periods	10
4.3 Weather	11
4.4 Instrumentation.....	12
4.5 Measurement Parameters	12
4.6 Measurement Results	13
4.6.1 Location N1: Daytime	13
4.6.2 Location N1: Night-time.....	13
4.6.3 Location N2: Daytime	14
4.6.4 Location N2: Night-time.....	14
4.7 EPA Published Noise Mapping.....	15
5 PROPG ACOUSTIC DESIGN STATEMENT	17
5.1 ProPG Stage 1 (Initial Noise Risk Assessment)	18
5.2 ProPG Stage 2 (Acoustic Design Statement).....	20
5.2.1 Element 1: Good Acoustic Design (GAD) Process.....	20
5.2.2 Element 2: Internal Noise Level Guidelines	23

Clear Real Estate Holdings Limited

Noise Impact Assessment of a Proposed Residential Development at Adamstown, Clonburris, Co. Dublin.



5.2.3	Element 3: External Amenity Area Noise Assessment	28
5.2.4	Element 4: Assessment of Other Relevant Issues	29
6	PLANT NOISE FROM THE PROPOSED DEVELOPMENT	31
7	CONCLUSIONS	32

List of Appendices

Appendix A: Service Constraints



1 INTRODUCTION

RSK Ireland Limited (RSK) was instructed by Clear Real Estate Holdings Limited to conduct a baseline noise surveys and noise impact assessment in respect of the proposed Residential Development at Adamstown, Clonburris, Co. Dublin.

The objective of this study is to assess the suitability of the site for a residential development and to provide recommendations for noise mitigation measures, where necessary to ameliorate potential impacts.

2 THE SITE

The area surrounding the application site is a mix of residential and commercial development with road and rail traffic noise sources in the nearby vicinity. A review of properties immediately surrounding the site has found the following typical uses:

- North of site:** the north of the site is the South Western Commuter railway line, where the proposed development site is located between the Adamstown and the Clondalkin/Fonthill stations. The closest distance from the railway line to the proposed residential facades is approx. 35 metres.
- East of site:** to the east of the site are greenfield lands.
- South of site:** To the South of the site are greenfield lands and the Lucan Pitch and Putt Club, beyond which is the Grand Canal.
- West of site:** To the West of the site is the R120, beyond which there is a Maxol service station which opens between 7am - 10pm Monday to Friday and 8am - 10pm on Weekends. Also, to the west of the site, on the opposite side of the R120, is the Lucretia Tiles head office, which consists of showroom, retail and warehouse space. Lucretia Tiles opens between 9am – 5:30pm Monday to Friday and 9am – 2:30pm on Saturdays.

Clear Real Estate Holdings Limited intend to apply for permission for 385no. units comprising 139no. houses, 142 no. duplexes and 104no. apartments in 2no. blocks ranging in height from 1 to 6 storeys. Private rear gardens are provided for all houses. Private patios / terraces and balconies are provided for all duplexes and apartments. The development also includes a single storey tenant amenity building, areas of public open space, car and bicycle parking, bin and bicycle stores, ESB substations, demolition of remaining walls and hardstanding associated with the former agricultural building and all associated and ancillary site development, infrastructural, hard and soft landscaping and boundary treatment works. Permission is also sought for minor revisions to attenuation pond permitted under SDCC Reg. Ref. SDZ20A/0021 as well as connections to water services (wastewater, surfacewater and water supply) and connections to permitted cycle / pedestrian paths and Link Road permitted under SDCC Reg. Ref. SDZ20A/0021.

Figure 1 shows the proposed site layout plan.

Figure 1: Proposed Site Layout Plan



3 NOISE CRITERIA

In preparing this noise impact assessment report, reference is made to the most relevant guidance for assessing the suitability of the site for a residential development, and for formulating a schedule of noise control measures; as summarised below.

3.1 Dublin Agglomeration Environmental Noise Action Plan (2018 – 2023): Volume 4, South Dublin County Council

The *Dublin Agglomeration Environmental Noise Action Plan, December 2018 – July 2023, Volume 4, South Dublin County Council (NAP)* provides guidance for the scenario whereby a residential development is proposed in an area exposed to pre-existing levels of environmental noise. Section 8.2.3 discusses *Noise in the Planning Process*, and this section is reproduced below:

“7.10.1.2 Planning and Development

When new developments are being constructed it is important that both houses and apartments are designed, orientated and located in such a way so as to limit the impacts of noise from traffic. All new applications for residential developments will be assessed and where there is the likelihood of an adverse noise impact the applicant will be required to produce a noise impact assessment carried out by appropriately qualified acousticians and competent persons². The noise impact assessment should demonstrate that all facets of the UK "Professional Practice Guidance on Planning & Noise" (2017) (ProPG) have been followed.

“8.2.3 Noise in the Planning Process

The Planning system has the potential to have a major influence on the control of future exposure to environmental noise. SDCC planning department already has in place measures to address potential noise issues in the planning process and guidance documents to aid planning applications in relation to noise. There is however scope to develop this further with particular emphasis on new developments where exposure levels can be harmful to health.

In the scenario where new residential development or other noise sensitive development is proposed in an area with an existing climate of environmental noise, there is currently no clear national guidance on appropriate noise exposure levels. The EPA has suggested that in the interim that Action Planning Authorities should examine the planning policy guidance notes issued in England titled, 'ProPG Planning and Noise: Professional Practice Guidance on Planning and Noise'. This has been produced to provide practitioners with guidance on a recommended approach to the management of noise within the planning system in England.

The noise levels measured on site will therefore be compared to relevant guidance for assessing the suitability of the site for residential development i.e. ProPG: *Professional Practice guidance on Planning and Noise for new Residential Development* (May 2017).

3.2 ProPG: Professional Practice Guidance on Planning and Noise for new Residential Development

ProPG provides a two staged approach for evaluating noise exposure on a proposed residential development. The two stages of the approach can be summarised as follows:

Stage 1 - Involves a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels.

Stage 2 – Involves a full detailed appraisal of the proposed development covering four “key elements” that include.:

Element 1 - Good Acoustic Design Process;

Element 2 - Noise Level Guidelines;

Element 3 - External Amenity Area Noise Assessment, and;

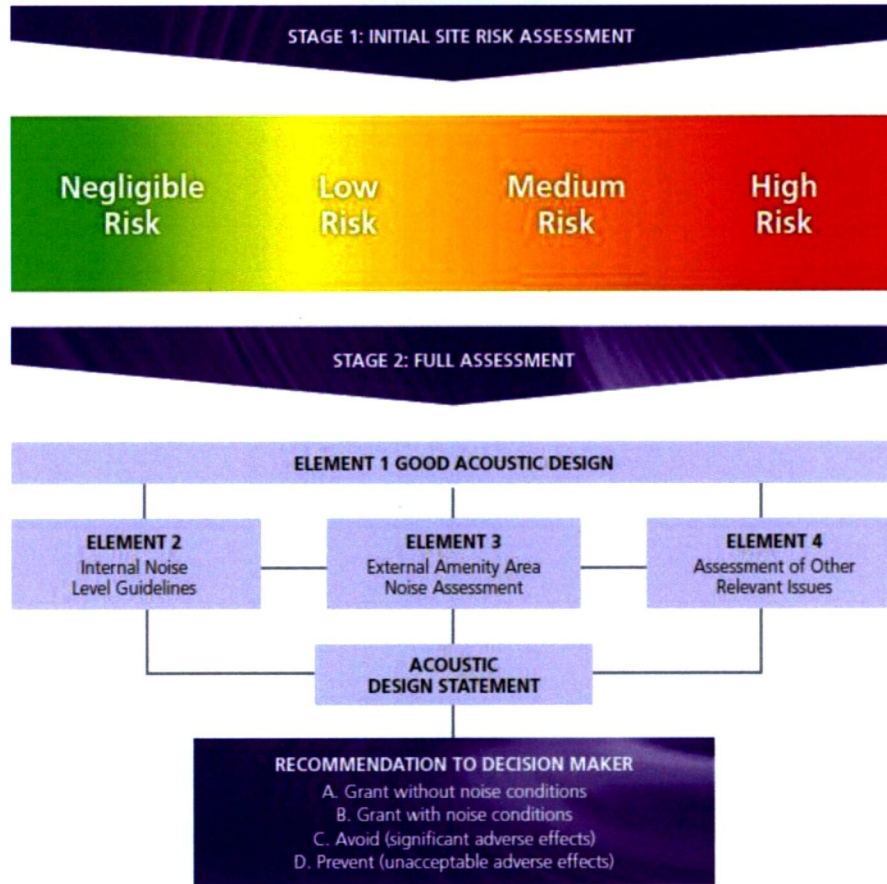
Element 4 - Other Relevant Issues.

An Acoustic Design Statement (ADS) is then prepared for submission to the planning authority. This ADS outlines the findings of the Stage 1 and Stage 2 assessments; and allows the planning authority to make an informed decision on the suitability of the site for development, with consideration of noise control measures where required. The ProPG document outlines the following potential outcome with respect of the ADS:

- A. Planning consent may be granted without any need for noise conditions;
- B. Planning consent may be granted subject to the inclusion of suitable noise conditions;
- C. Planning consent should be refused on noise grounds in order to avoid significant adverse effects (“avoid”); or,
- D. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects (“prevent”).

A summary of the ProPG approach is illustrated in Figure 2.

Figure 2: ProPG Assessment Strategy (Source: ProPG)



3.2.1 ProPG and BS 8233 *Guidance on sound insulation and noise reduction for buildings*

BS 8233 is referenced in ProPG with regard to internal noise levels within dwellings. The following internal noise targets are presented as derived from BS 8233 (2014).

Table 1: ProPG Internal Noise Targets (derived from BS 8233:2014)

Activity	Location	Daytime (07:00 to 23:00hrs)	Night-time (23:00 to 07:00hrs)
Resting	Living room	35 dB $L_{Aeq,16hr}$	-
Dining	Dining room/area	40 dB $L_{Aeq,16hr}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16hr}$	30 dB $L_{Aeq,8hr}$ 45 dB $L_{Amax,T}^*$

* internal $L_{AFmax,T}$ noise level may be exceeded up to 10 times per night without a significant impact occurring.

3.2.2 ProPG and BS 4142 *Methods for rating and assessing industrial and commercial sound*

Given that the site is adjacent to a commercial area, it is appropriate also to consider the guidance provided in BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*. ProPG states the following *in the case of sites exposed to industrial and/or commercial noise*:

2.13 *As stated in the Introduction, the scope of this ProPG is restricted to sites that are exposed predominantly to noise from transportation sources. The key concerns regarding new residential development near existing industrial and/or commercial land uses are:*

- *The future occupants of the new noise sensitive development may be subject to adverse effects of noise, and*
- *The existing industrial and/or commercial business may become subject to complaints from future occupants of the new noise sensitive development and at risk of having to modify operations and/or incur additional costs.*

2.14 *In the special case where industrial or commercial noise is present on the site but is “not dominant” (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk (and if included, this should be clearly stated).*

2.15 *Where industrial or commercial noise is present on the site and is considered to be “dominant” (i.e. where the impact would be rated as adverse or greater (subject to context) if a BS4142:2014 assessment was to be carried out), then the risk assessment should not be applied to the industrial or commercial noise component and regard should be had to the guidance in BS4142:2014. The judgement on whether or not to undertake a BS4142 assessment to determine dominance should be proportionate to the level of risk. In low risk cases a subjective judgement of dominance, based on audibility, would normally be sufficient.*

In this instance and based upon a subjective judgement of personnel conducting the baseline noise surveys, it is concluded that commercial noise is “not dominant” at any location across the site. As such the contribution to measured noise levels from any industrial or commercial noise is included in the noise level used to establish the ProPG degree of risk, and a separate BS 4142 assessment of industrial or commercial noise is not required.

4 BASELINE NOISE SURVEY

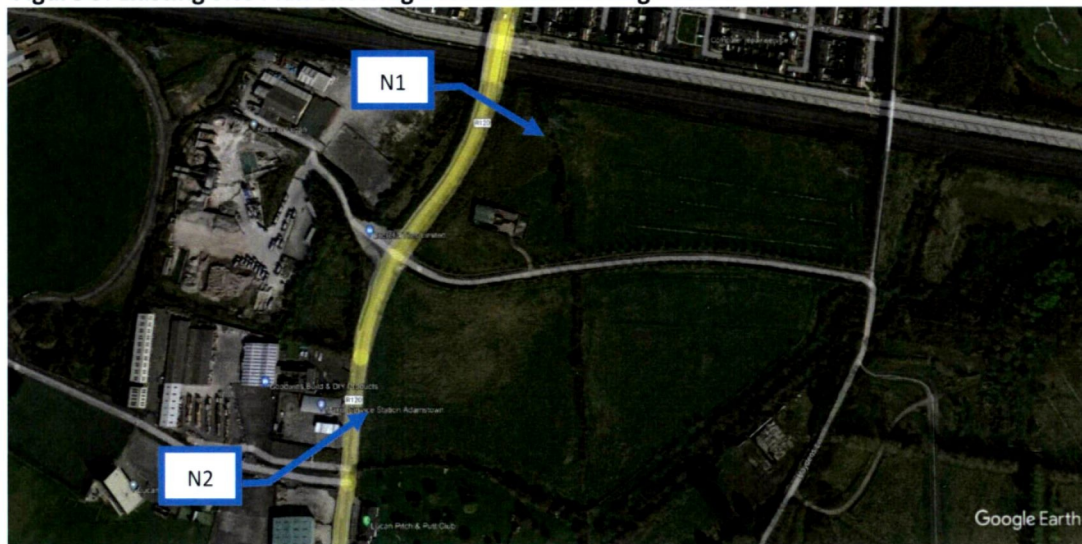
Environmental noise surveys has been conducted on site in order to establish the baseline noise environment. Noise survey have been conducted in accordance with ISO 1996-2:2017 “Acoustics -- Description, measurement and assessment of environmental noise -- Part 2: Determination of sound pressure levels”.

Baseline noise measurements were made in January 2023 consisting of an unattended survey (N1), continually logging noise data on site, for an approx. 7-day period, and an unattended survey (N2), continually logging noise data on site, for an approx. 3-day period. Survey details are presented in the following sections

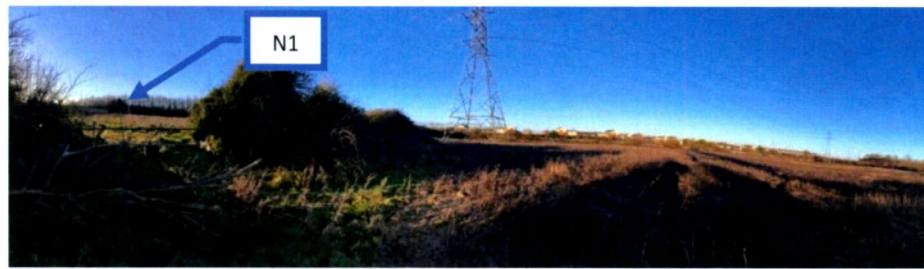
4.1 Monitoring Locations

Noise measurements were conducted at Location N1 and N2, which were chosen as representing the section of the site with the highest potential noise levels, i.e. positions in the vicinity of the proposed Apartment Blocks and dwelling along the northern and western site perimeter which will be exposed to the highest road and/or rail traffic noise levels due to their proximity to these traffic sources. The noise measurement locations are shown in Figure 3 with a photograph of the measurement positions shown in the description beneath.

Figure 3: Existing Site Plan Showing Baseline Monitoring Position



Location N1 to the north-west east of the site at a location exposed both to road and rail traffic. This noise survey position comprised of unattended day and night-time time monitoring over a 7-day period.



Location N2 along the western site perimeter at a location exposed both to primarily road traffic. This noise survey position comprised of unattended day and night-time monitoring over a 3-day period. The noise monitor was located closer to road than proposed location of duplex facades (for reasons of equipment security). Noise levels at the location of the proposed duplex facades can be expected to be approximately 5dB lower at the location of the proposed closest building façade.



The noise measurement locations in the context of the proposed development site are shown in Figure 4.

Figure 4: Proposed Site Plan Showing Baseline Monitoring Positions



4.2 Survey Periods

Noise measurements were conducted over the duration of the following periods:

Table 2: Noise Survey Periods

Period	Location	Date	Start Time	Stop Time
Daytime (07:00 - 23:00)	N1	19 th - 26 th January 2023	19/01 at 15:30	26/01 at 12:00
Night-time (23:00 - 07:00)			19/01 at 23:00	26/01 at 07:00
Daytime (07:00 - 23:00)	N2	27 th - 30 th January 2023	27/01 at 16:30	30/01 at 10:30
Night-time (23:00 - 07:00)			27/01 at 23:00	30/01 at 07:00

4.3 Weather

The weather during the unattended day and night-time surveys of 19th – 26th January 2023 were generally dry and calm. The weather during is summarised as follows (ref. <https://www.met.ie/climate/available-data/daily-data>) from the Casement met station.

Table 3: Weather Conditions

Date	Period	Temperature Degrees Celsius	Precipitation	Wind Speed knots	Wind Direction
19 January	Daytime	-2 to 4	No	5 to 9	SW
19/20 January	Night-time	-2 to 0	No	3 to 7	SW
20 January	Daytime	-1 to 6	No	1 to 7	SW
20/21 January	Night-time	5 to 7	No	2 to 4	S – SW
21 January	Daytime	7 to 9	No	4 to 12	SW
21/22 January	Night-time	7 to 9	No	4 to 10	SW
22 January	Daytime	8 to 10	No	3 to 11	SW
22/23 January	Night-time	8 to 9	No	3 to 8	SW
23 January	Daytime	7 to 11	3 - 5pm	2 to 9	SW
23/24 January	Night-time	7 to 9	No	6 to 10	SW
24 January	Daytime	7 to 10	No	6 to 11	SW
24/25 January	Night-time	7 to 8	2 – 4am	8 to 10	SW
25 January	Daytime	2 to 9	11am – 1pm	2 to 10	SW – NW
25/26 January	Night-time	1 to 3	No	2 to 4	SW
26 January	Daytime	3 to 7	No	2 to 6	SW
27 January	Daytime	1 to 6	No	3 to 7	W
27/28 January	Night-time	3 to 4	No	7 to 9	SW
28 January	Daytime	4 to 7	5 - 7pm	5 to 9	SW
28/29 January	Night-time	3 to 5	No	4 to 7	SW
29 January	Daytime	4 to 8	No	5 to 10	SW
29/30 January	Night-time	2 to 4	No	3 to 7	SW
30 January	Daytime	4 to 5	No	4 to 7	SW

In line with best practice, periods of elevated winds and heavy rain have been omitted from the study.

4.4 Instrumentation

The noise measurements were undertaken using the following equipment.

Table 4: Survey Equipment

Survey	Equipment	Type	Serial No.	Calibration Date
Jan 2023	Class 1 Sound Level Meter	Larson Davis SoundExpert® LxT	0005129	12/04/22

The equipment used has a calibration history that is traceable to a certified calibration institution. The calibration of the sound level meter was field checked prior to commencing measurements and prior to removing the equipment from site upon completion. A calibration drift of -0.1dB was noted upon commencement of the survey and +0.1 upon survey completion. The sound level meter calibration certificates are available on request.

The sound level meter conformed to the Class 1 requirements of BS EN 61672-1:2013 'Electroacoustics. Sound level meter, Specifications'. The calibrator used conforms to the requirements of BS EN IEC 60942:2018 'Electroacoustics. Sound calibrators'.

4.5 Measurement Parameters

The noise survey results are presented in decibels (dB), using the following parameters:

$L_{Aeq,T}$	is the equivalent continuous sound level and is used to describe a fluctuating sound as a single value over the sample period (T).
$L_{AFmax,T}$	The maximum A-weighted sound pressure level occurring within a specified time period (T). Measured using the "Fast" time weighting.
$L_{AF10,T}$	Refers to those A-weighted noise levels in the top 10 percentile of the sampling interval; it is the level which is exceeded for 10% of the measurement period (T). It is used to determine the intermittent high noise level features of locally generated noise and usually gives an indicator of the level of road traffic. Measured using the "Fast" time weighting.
$L_{AF90,T}$	Refers to those A-weighted noise levels in the lower 90 percentile of the sampling interval (T). It is the level which is exceeded for 90% of the measurement period. It will therefore exclude the intermittent features of traffic and is used to describe a background level without contribution from intermittent sources.

All sound levels in this report are expressed in terms of decibels (dB) relative to 2×10^{-5} Pa. Noise measurements use a reference time period (T) of 15-minutes.

4.6 Measurement Results

4.6.1 Location N1: Daytime

Table 5 summarises the measured daytime (i.e. 07:00 to 23:00) noise levels at Location N1.

Table 5: Measured Daytime Noise Levels at Location N1

Period	Date	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)				Notes
			L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}	
Daytime	19/01 Thu	15:30-23:00	53	90	58	42	Road traffic dominant with intermittent train movements also audible
	20/01 Fri	07:00-23:00	52	89	57	41	
	21/01 Sat		50	85	56	41	
	22/01 Sun		49	87	55	40	
	23/01 Mon		56	88	59	43	
	24/01 Tue		54	86	59	44	
	25/01 Wed		53	85	58	42	
	26/01 Thu	07:00-12:30	53	88	57	41	

The daily daytime ambient noise level was 53 dB L_{Aeq,16hr}. Road traffic movements were noted to be the dominant source of noise at this measurement position.

4.6.2 Location N1: Night-time

Table 6 summarises the measured night-time (i.e. 23:00 to 07:00hrs) noise levels at Location N1.

Table 6: Measured Night-time Noise Levels at Location N1

Period	Date	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)				Notes
			L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}	
Night-time	19-20/01 Thu	23:00-07:00	47	84	52	36	Local and distant road traffic dominant
	20-21/01 Fri		46	78	52	35	
	21-22/01 Sat		45	81	50	34	
	22-23/01 Sun		46	79	51	35	
	23-24/01 Mon		48	76	53	37	
	24-25/01 Tue		47	78	52	37	
	25-26/01 Wed		46	82	51	36	

The total night-time ambient noise level was 47 dB L_{Aeq,8hr}. Local and distant road traffic were dominant noise sources during night-time periods.

4.6.3 Location N2: Daytime

Table 7 summarises the measured daytime (i.e. 07:00 to 23:00) noise levels at Location N2.

Table 7: Measured Daytime Noise Levels at Location N2

Period	Date	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)				Notes
			L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}	
Daytime	27/01 Fri	17:15-23:00	68	91	72	52	Road traffic noise dominant. Noise monitor located closer to road than proposed location of duplex facades
	28/01 Sat	07:00-23:00	69	90	73	53	
	29/01 Sun		68	104	72	52	
	30/01 Mon	07:00-10:15	71	90	75	60	

The daily daytime ambient noise level was 69 dB L_{Aeq,16hr}. Road traffic movements were noted to be the dominant source of noise at this measurement position.

The noise monitor was located closer to road than proposed location of duplex facades (for reasons of equipment security). Noise levels at the location of the proposed duplex facades can be expected to be approximately 5dB lower at the location of the proposed closest building façade.

4.6.4 Location N2: Night-time

Table 8 summarises the measured night-time (i.e. 23:00 to 07:00hrs) noise levels at Location N2.

Table 8: Measured Night-time Noise Levels at Location N2

Period	Date	Time	Measured Noise Levels (dB re. 2×10^{-5} Pa)				Notes
			L _{Aeq}	L _{Amax}	L _{A10}	L _{A90}	
Night-time	27-28/01 Fri	23:00-07:00	62	85	59	42	Local and distant road traffic dominant
	28-29/01 Sat		61	83	60	41	
	29-30/01 Sun		64	86	59	43	

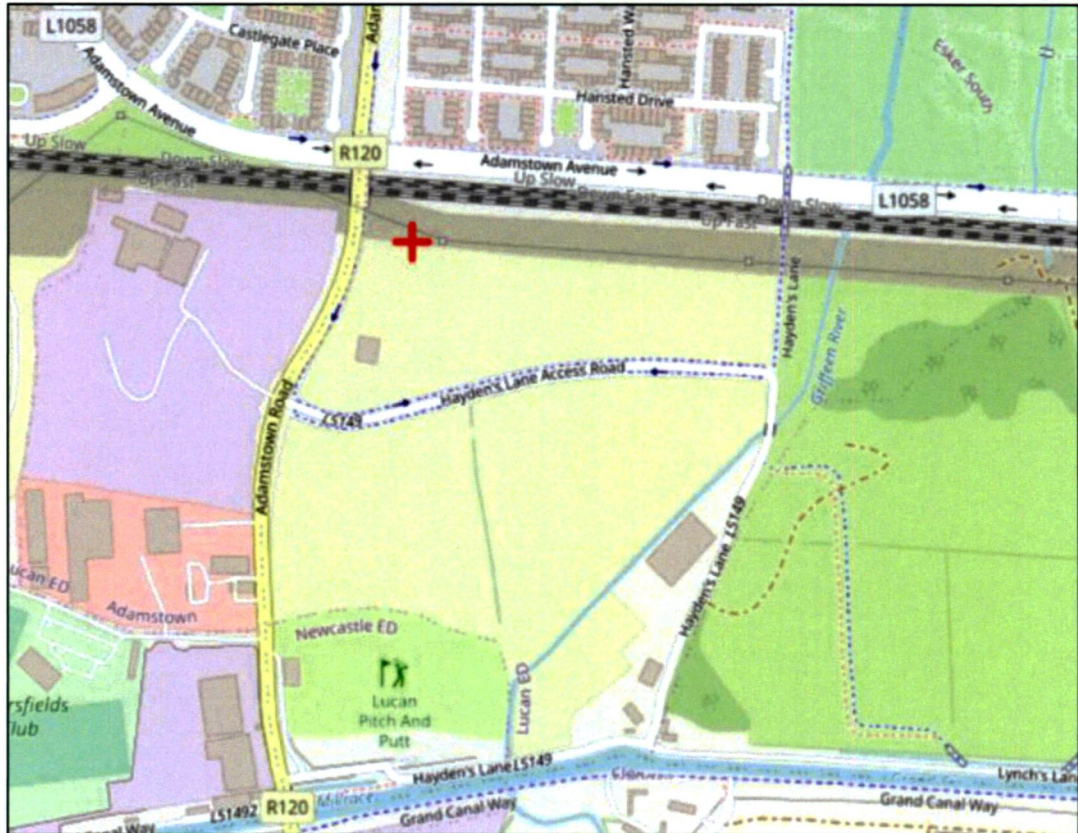
The total night-time ambient noise level was 63 dB L_{Aeq,8hr}. Local and distant road traffic were dominant noise sources during night-time periods.

Noise levels at the location of the proposed duplex facades can be expected to be approximately 5dB lower at the location of the proposed closest building façade.

4.7 EPA Published Noise Mapping

Reference is also made to published noise mapping available on the EPA website (ref. <https://gis.epa.ie/EPAMaps/>) for the proposed site. Figure 5 Shows the approximate site location and baseline noise monitoring position.

Figure 5: Approx. Site Location (with approx baseline noise monitoring location Indicated by +)



Figures 6 and 7 present the published noise mapping in terms of the calculated L_{den} and L_{night} values for both Road and Rail Traffic Sources.

Figure 6: L_{den} (left) and L_{night} (right) Noise Map, Round 3: Rail Sources

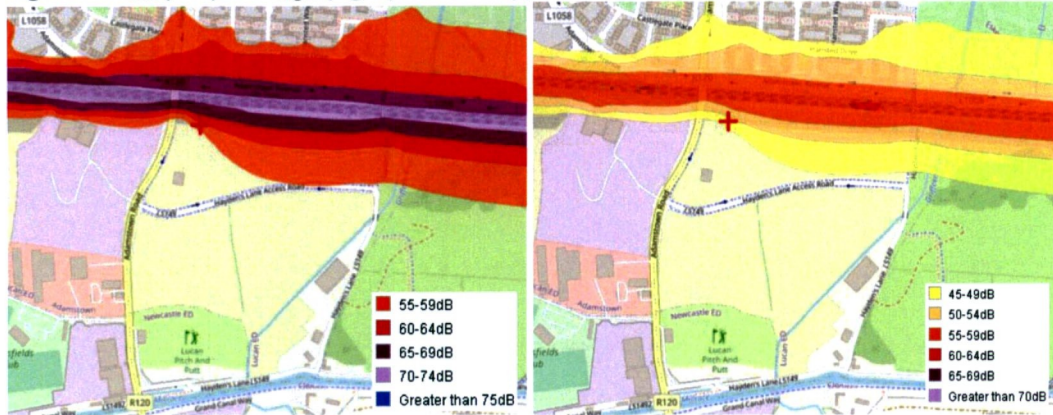


Figure 7: L_{den} (left) and L_{night} (right) Noise Map, Round 3: Road Sources



The noise mapping values may be discussed in the context of the measured baseline values, in order to provide a comparison between on-site measurement data and noise mapping data. The noise mapping data is also useful to better understand how traffic noise sources will propagate across the site.

Figures 6 and 7 indicates L_{den} values up to around 60 dB, at the noise monitoring location N1. As a comparison, the total measured L_{dn} value at the baseline noise monitoring location N1 (ref Figure 3) was 55 dB.

Figures 6 and 7 also indicate an L_{night} value of approx. 50 dB at the noise monitoring location N1. As a comparison, the total measured $L_{Aeq,23:00 - 07:00hrs}$ value at the baseline noise monitoring location N1 (ref Figure 3) was 47 dB.

The EPA noise mapping data will be considered and referenced in preparation of the façade sound insulation performance specification.

5 PROPG ACOUSTIC DESIGN STATEMENT

ProPG outlines a systematic risk based 2 stage approach for evaluating noise exposure on prospective sites for residential development. The two primary stages of the approach can be summarised as follows:

Stage 1 - Comprises a high-level initial noise risk assessment of the proposed site considering either measured and or predicted noise levels, and;

Stage 2 – Involves a full detailed appraisal of the proposed development covering four “key elements” that include:

- Element 1 - Good Acoustic Design Process;
- Element 2 - Noise Level Guidelines;
- Element 3 - External Amenity Area Noise Assessment, and;
- Element 4 - Other Relevant Issues.

ProPG is intended to outline the methodology and findings of the assessments, so as the planning authority can make an informed decision on the permission. ProPG outlines the following possible recommendations in relation to the findings:

- A. Planning consent may be granted without any need for noise conditions;
- B. Planning consent may be granted subject to the inclusion of suitable noise conditions;
- C. Planning consent should be refused on noise grounds in order to avoid significant adverse effects (“avoid”); or,
- D. Planning consent should be refused on noise grounds in order to prevent unacceptable adverse effects (“prevent”).

The following sections present the results of both the Stage 1 and Stage 2 studies.

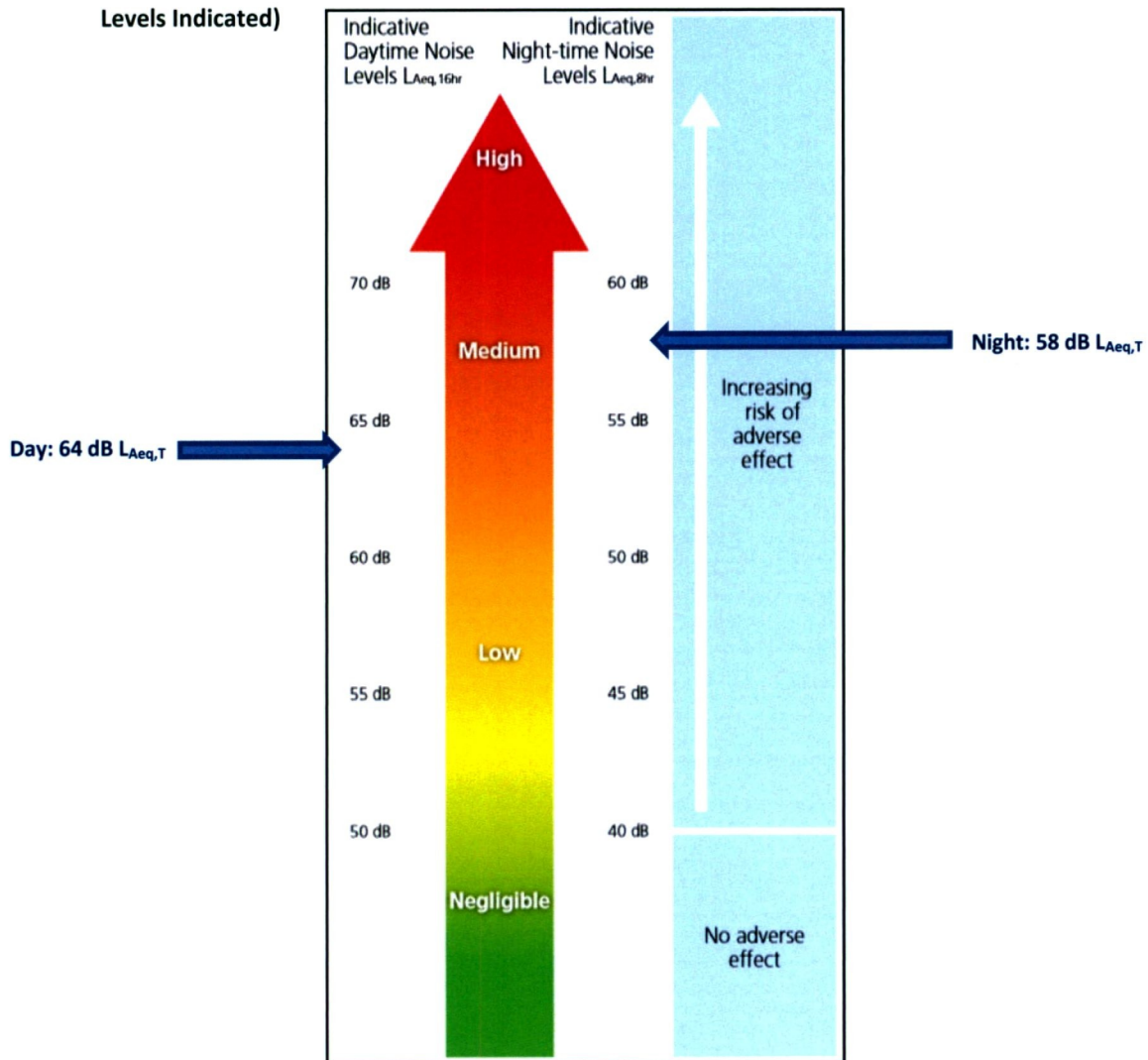
5.1 ProPG Stage 1 (Initial Noise Risk Assessment)

The initial noise risk assessment is intended to provide an early indication of any acoustic issues that may be encountered. It calls for the categorization of the site as a negligible, low, medium or high risk based on the pre-existing noise environment.

Figure 8 presents the basis of the initial noise risk assessment; it provides appropriate risk categories for a range of continuous noise levels either measured and/or predicted on site.

The noise levels indicated on Figure 8 are 'worst-case' values derived from the noise survey data, with corrections applied to the data to account for the proximity of the closest proposed development facades to nearby noise sources, along with EPA noise mapping data.

Figure 8 ProPG Stage 1 - Noise Risk Assessment Categories (Highest Expected Site Noise Levels Indicated)



ProPG also states that a site should not be considered a negligible risk if more than 10 L_{AFmax} events exceed 60 dB during the night period and the site should be considered a high risk if the L_{AFmax} events exceed 80 dB more than 20 times a night.



Reference to the L_{AFmax} noise measurement data (Tables 6 and 8) confirms that 80dB L_{AFmax} was not regularly exceeded on any night over the course of the survey (i.e. not more than 20 times in any of the nights), thus would not fall within the high-risk category.

A Stage 1 noise risk assessment of the proposed site has been conducted, based on measured noise levels on site and expected noise levels on site in the foreseeable future, with comparison to the categories outlined in Figure 8.

With reference to the existing noise levels measured on site (as presented in Section 4.6), the initial ProPG noise risk categories, for the facades most exposed to road traffic noise, are summarised as follows:

Daytime: **Low to Medium**

Night-time **Medium**

5.2 ProPG Stage 2 (Acoustic Design Statement)

With consideration of the Stage 1 review, as presented above, it is considered that the site is suitable for residential development, provided that an appraisal of the proposed development is carried out, covering four key elements that include:

- Element 1 - Good Acoustic Design Process.
- Element 2 - Noise Level Guidelines.
- Element 3 - External Amenity Area Noise Assessment.
- Element 4 - Other Relevant Issues.

5.2.1 Element 1: Good Acoustic Design (GAD) Process

Good acoustic design should aim to deliver optimum acoustic design for a site without adversely affecting amenity or quality of life or compromising other sustainable design objectives. ProPG states that good acoustic design is not equivalent to overdesign of all new development but that it seeks to deliver an optimum acoustic environment for a given site. ProPG outlines the following checklist for GAD:

- Check the feasibility of relocating or reducing noise levels from relevant sources.
- Consider options for planning the site or building layout.
- Consider the orientation of proposed building(s).
- Select construction types and methods for meeting building performance requirements.
- Examine the effects of noise control measures on ventilation, fire regulation, health and safety, cost, CDM (construction, design and management) etc.
- Assess the viability of alternative solutions.
- Assess external amenity area noise.

Each item listed above have been addressed in the following sections.

5.2.1.1 *Relocation or Reduction of Noise from Source*

The dominant noise source impacting upon the site is road traffic from the surrounding transport network. Given that the roads are located outside the site boundary, additional reduction of noise as source cannot be considered in respect of this development.

A reduction in noise at source from vehicular noise could be achieved via the provision of a barrier between the site and traffic noise sources, if necessary. The necessity/requirement for a perimeter acoustic screen is, however, dependent on the anticipated external noise levels at dwelling façade / amenity areas, and other factors, which are discussed in Section 5.2.3.

5.2.1.2 *Planning, Layout and Orientation*

Development buildings are set back from the nearby transport network in accordance with local planning guidelines. It is considered that the layout and orientation of the proposed development is sufficient in the context of noise emissions and GAD.

5.2.1.3 Select Construction Types for meeting Building Regulations

Concrete constructions will be used for external walls of dwellings. Solid concrete constructions provide high levels of sound insulation performance.

Glazing and ventilation paths are typically the weakest façade elements in terms of sound insulation performance. The provision of glazing and ventilators offering an appropriate level of sound insulation will therefore be provided. Additional review of specific locations is provided in Section 5.2.2.4.

It will be necessary to provide habitable rooms with acoustically rated ventilators along the building elevations most exposed to traffic noise. Occupants will have the options to open the windows if they so wish, however, doing so will increase the internal noise level. This approach to mitigation is acknowledged in ProPG, as reproduced below:

“2.22 Using fixed unopenable glazing for sound insulation purposes is generally unsatisfactory and should be avoided; occupants generally prefer the ability to have control over the internal environment using openable windows, even if the acoustic conditions would be considered unsatisfactory when open. Solely relying on sound insulation of the building envelope to achieve acceptable acoustic conditions in new residential development, when other methods could reduce the need for this approach, is not regarded as good acoustic design. Any reliance upon building envelope insulation with closed windows should be justified in supporting documents “

Note 5 Designing the site layout and the dwellings so that the internal target levels can be achieved with open windows in as many properties as possible demonstrates good acoustic design. Where it is not possible to meet internal target levels with windows open, internal noise levels can be assessed with windows closed, however any façade openings used to provide whole dwelling ventilation (e.g. trickle ventilators) should be assessed in the “open” position and, in this scenario, the internal L_{Aeq} target levels should not normally be exceeded

2.34 Where the LPA accepts that there is a justification that the internal target noise levels can only be practically achieved with windows closed, which may be the case in urban areas and at sites adjacent to transportation noise sources, special care must be taken to design the accommodation so that it provides good standards of acoustics, ventilation and thermal comfort without unduly compromising other aspects of the living environment. In such circumstances, internal noise levels can be assessed with windows closed but with any façade openings used to provide “whole dwelling ventilation” in accordance with Building Regulations Approved Document F (e.g. trickle ventilators) in the open position (see Supplementary Document 2). Furthermore, in this scenario the internal L_{Aeq} target noise levels should not generally be exceeded.”

It is therefore acceptable to provide building facades with appropriate sound insulation, with windows closed and vents open, that result in a good internal acoustic environment.

5.2.1.4 *Impact of noise control measures on fire, health and safety etc*

The proposed noise control measures do not have a significant impact on fire or other health and safety issues.

5.2.1.5 *Assess Viability of Alternative Solutions*

The major noise sources incident on the site are road traffic. Road traffic is mitigated by the distance from the road edge to the building, screening by existing/proposed structures, off and on-site buildings and orientation of windows. All the measures listed above aid in the control of noise intrusion to the living areas and bedrooms across the majority of the development.

5.2.1.6 *Assess External Amenity Area Noise*

ProPG advises the following in relation to external noise levels in amenity areas:

The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.

An assessment of noise within external amenity areas is addressed in the relevant section of this document.

5.2.1.7 *GAD Summary*

It is considered that the principles of Good Acoustic Design have been applied to the development.

5.2.2 Element 2: Internal Noise Level Guidelines

5.2.2.1 Internal Noise Criteria

ProPG recommends internal noise targets as derived from BS 8233. These internal noise level targets are presented in Table 1.

ProPG acknowledges that there can be some flexibility given in cases where the development is necessary or desirable, and that a relaxation by up to 5dB of the internal L_{Aeq} values can still provide reasonable internal conditions.

5.2.2.2 Assessed External Noise Levels

Noise surveys and calculations have been conducted across the site in order to establish the range and magnitude of noise levels at various positions on-site. Table 9 presents the free-field noise levels used for assessment purposes.

Table 9: Projected Noise Levels at Development Facades

Development Zone (Ref. Figure 9)	Period	Assessment Level (dB $L_{Aeq,T}$)
Zone A (Red)	Daytime (07:00 to 23:00)	64
All other Facades		< 55
Zone A (Red)	Night-time (23:00 to 07:00)	58
All other Facades		< 45

Figure 9: Façade Noise Level Designations



5.2.2.3 Façade Acoustic Performance Specification

The methodology to estimate internal noise level within a building is outlined in Annex G of BS 8233: 2014 and is derived from BS EN 12354-3: 2000: *Building acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound*. The methodology calculates internal noise levels based on a reference external noise level (i.e. octave band frequency data as measured in baseline noise surveys) and proposed façade constructions. The standard takes into account the following site-specific characteristics:

- External noise level;
- Area and type of each façade element (i.e. window, wall, etc.);
- Shape of the façade, and;
- Characteristics of the receiving room (i.e. room volume, reverberation time etc.)

This method has been used to determine the required sound insulation performance for the various building façade elements.

Glazing

Facades shall be provided with glazing that achieves the following minimum sound insulation performance.

Table 10: Glazing Acoustic Specification (Ref. Figure 9)

Specification (Ref Figure 9)	Sound Reduction Performance Requirements (dB) in Octave Frequency Bands (Hz)						Typical Overall dB R _w
	125	250	500	1k	2k	4k	
Zone A (Red)	29	32	41	40	41	55	41
All other facades	21	20	31	37	35	40	34

The overall R_w values outlined above are provided for information purposes only. The over-riding requirement is the Octave Band sound insulation performance values.

The acoustic performance specifications are minimum requirements which apply to the overall glazing system. The 'glazing system' is understood to include any and all of the component parts that form part of the glazed element of the façade, i.e. glass, frames, seals, openable elements etc.

The window supplier shall provide laboratory tests confirming the sound insulation performance, (to British Standard 2750 Part 3:1980 and British Standard 5821, or British Standard EN ISO 140 Part 3 1995 and British Standard EN ISO 717, 1997).

Wall / Roof Constructions

Masonry wall and roof constructions with plasterboard linings typically offer sound insulation performance much greater than that offered by the glazed elements.

The calculated internal noise levels across the building façade have assumed a minimum sound reduction index of 56 dB R_w for these constructions. The performance of non-glazed elements of the façade will be confirmed as part of the detailed design phase.

5.2.2.4 Acoustic Attenuation to Ventilation Systems

It has been well established that a partially open window will typically offer between 15 dB¹ and 18dB attenuation from external noise sources. If we consider the internal noise criteria as outlined in Table 1, with the 5 dB relaxation for reasonable conditions, and then allow the 15 dB attenuation value for a partially open window, we arrive at external noises, above which reasonable internal conditions will not be achieved without the use of acoustic attenuation to ventilation systems. This allows us to provide a key to locations where acoustically attenuated ventilation will need to be provided.

Acoustic attenuation to ventilation systems shall therefore be provided in accordance with the following specification:

Table 11: Specification for Acoustic Ventilators

Development Zone (Ref. Figure 9)	Rooms	Vent Required Acoustic Performance dB $D_{ne,w}$
Zone A (Red)	Living/Dining Rooms	41
	Bedrooms	
All other facades	Living/Dining Rooms	N/A
	Bedrooms	

The ventilation supplier shall provide evidence, consisting of calculations and/or laboratory tests confirming the acoustic performance of ventilation systems.

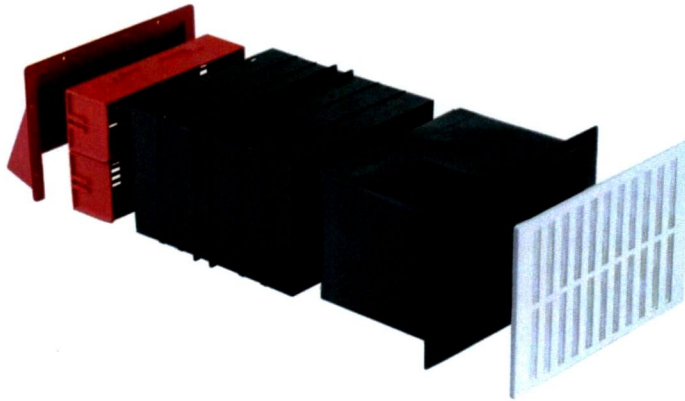
Acoustic wall ventilators are available from Titon UK (contact details below), or similar approved suppliers.

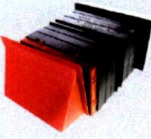
- [Wall Vents - Titon UK: \(https://www.titon.com/uk/products/ventilation-systems/wall-vents\)](https://www.titon.com/uk/products/ventilation-systems/wall-vents)
- [Window Vents - Titon UK: \(https://www.titon.com/uk/products/ventilation-systems/window-vents\)](https://www.titon.com/uk/products/ventilation-systems/window-vents)

Typical acoustic wall / window ventilator examples that achieve the required acoustic performance are as follows:

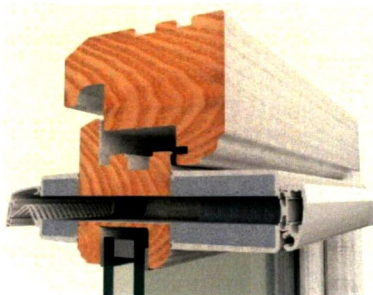
¹ Ref. Section 2.33 of ProPG, additional information can be found in the DEFRA NANR116: 'Open/Closed Window Research' Sound Insulation Through Ventilated Domestic Windows'

Acoustic Wall Vent example:



TALHMCW	'9x6' Cowled Acoustic AirLiner® Set with Hit & Miss Ventilator (Up to 42 dB D _{n,r,w})		
 <ul style="list-style-type: none"> Controllable air vent for background room ventilation Acoustic lining reduces sound by 42 dB D_{n,r,w} with internal grille fully open or closed Cowl and internal baffles reduce light and draughts Internal hit & miss grille manually adjusted with an easy sliding action giving control over air flow External baffles prevent cross cavity water transfer Cowl and grilles U.V. stabilised New higher equivalent area confirmed by the BRE Acoustic performance tests by BRE Acoustics. 	<p>Cowl: 255mm L x 154mm H x 74mm D</p> <p>AirLiner: Extends from 250-404mm L with air brick fitted</p>	<p>Cowl & Air Brick: Terracotta, buff/ sand</p> <p>Hit & Miss: White</p>	<p>9800mm² 98cm²</p>

Acoustic Window Vent Example:



SF Xtra Sound Attenuator internal



SF Sound Attenuator Canopy external

Acoustic Ratings

Product	EA (mm ²)	Open	Closed
TA5225 (V75) + TA5206 (C75)	2500	D _{n,r,w} (C;Ctr) = 44 (-2;-3)dB	D _{n,r,w} (C;Ctr) = 55 (-1;-5)dB
TA5225 (V75) + TA5204 (C50)	2500	D _{n,r,w} (C;Ctr) = 42 (-1;-2)dB	D _{n,r,w} (C;Ctr) = 55 (-2;-5)dB

5.2.3 Element 3: External Amenity Area Noise Assessment

ProPG advises the following in relation to external noise levels in amenity areas:

The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,16hr}$.

It is a ProPG requirement to assess noise levels within external amenity spaces. ProPG refers to guidance contained in BS 8233 (2014) for this element of the assessment, the relevant extract of BS 8233 (2014) states:

“The acoustic environment of external amenity areas that are an intrinsic part of the overall design should always be assessed and noise levels should ideally not be above the range 50 – 55 dB $L_{Aeq,T}$ which would be acceptable in noisier environments. However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.”

With consideration of the various external amenity spaces proposed as part of the development, the following comments are provided:

Private Gardens to Dwellings: External noise levels the majority of gardens to dwellings (with the exception of the front gardens and balconies/terrace areas of units 170 to 211 that face onto the R120) are predicted to be within the BS 8233 (2014) ideal recommended range of 50 to 55dB $L_{Aeq,T}$.

The noise levels in the front gardens and balconies/terrace areas of the duplex units 170 to 211 i.e. duplex units adjoining the R120, are calculated to exceed the ideal 50 to 55 dB $L_{Aeq,T}$ range. Noise levels up to 65 dB $L_{Aeq,T}$ can be expected in these external amenity areas. The inclusion of an acoustic screen/barrier to reduce noise levels in these areas is not practical as this would introduce negative landscape and visual impact on the streetscape. However, these duplex units do have private external amenity areas (in the form of terraces / balconies) to both sides of the units i.e. the occupant has the option of using the internal street side facing terraces / balconies, where noise levels will comply with the ideal 50 to 55 dB $L_{Aeq,T}$ range.

Public Open Space: There is also a number of Public Open Spaces proposed as part of the development where noise levels are calculated to be <55 dB $L_{Aeq,T}$. This is in-line with the ProPG recommended range of noise levels.

Summary:

It is considered that the requirements of ProPG have been complied with in terms of the availability and provision of suitably quiet external amenity spaces for use by residents.

5.2.4 Element 4: Assessment of Other Relevant Issues

ProPG defines a number of other issues that should be considered and may prove pertinent to the assessment:

- 4(i) compliance with relevant national and local policy
- 4(ii) magnitude and extent of compliance with ProPG
- 4(iii) likely occupants of the development
- 4(iv) acoustic design v unintended adverse consequences
- 4(v) acoustic design v wider planning objectives

Each of the above considerations are discussed below.

5.2.4.1 Compliance with Relevant National and Local Policy

The *Dublin Agglomeration Environmental Noise Action Plan, December 2018 – July 2023, Volume 4, South Dublin County Council (NAP)*, Section 8.2.3, discusses *Noise in the Planning Process*, and advocates the use of *ProPG: Professional Practice guidance on Planning and Noise for new Residential Development (May 2017)*.

This report has therefore been prepared in compliance with the requirements of local policy.

5.2.4.2 Magnitude and extent of compliance with ProPG

The following conclusions are made in relation to the magnitude and extent of compliance with ProPG:

- All dwellings have been designed to achieve the good internal noise levels, as specified within ProPG, when windows are closed.
- Dwellings will also achieve good internal noise levels with windows closed and acoustic ventilators open.
- The external amenity space has been assessed and is determined to be within the ProPG guidance for noise levels in external amenity areas.

It is therefore concluded that the proposed development is in compliance with the requirements of ProPG.

5.2.4.3 Likely occupants of the development

The development consists of a mixture of dwelling type and is designed for the purpose of residential use. The criteria adopted as part of this assessment are based on those recommended for permanent dwellings and are therefore considered robust and appropriate for the occupants.

5.2.4.4 *Acoustic design v unintended adverse consequences*

There have not been any unintended adverse consequences identified resulting from the acoustic design and control measures.

5.2.4.5 *Acoustic design v wider planning objectives*

Acoustic design has been considered in the context of wider planning objectives, particularly the National Planning Framework 2040. (NPF) The NPF is taken into consideration in the production of local planning policy/guidelines and plans. In following existing local / national guidelines and policies, it is considered that the acoustic design is compliant with wider planning objectives.

6 PLANT NOISE FROM THE PROPOSED DEVELOPMENT

Reference is made to British Standard BS4142:2014+A1: 2019: '*Methods for Rating and Assessing Industrial and Commercial Sound*' (BS 4142) in setting criteria for any new mechanical plant items. This standard outlines methods for analysing building services plant sound emissions to residential receptors. BS 4142 is frequently referenced in DCC Planning Conditions and is widely considered the 'industry standard' methodology for the assessment of industrial noise in the Dublin City region.

BS 4142 describes methods for rating and assessing sound of an industrial and/or commercial nature, using outdoor sound levels to assess the likely effects of sound on people who might be inside or outside a dwelling upon which the sound is incident.

The BS 4142 assessment methodology compares the measured external background sound level (in the absence of plant items) to the rating sound level, of the plant items, when operational. Where sound emissions are found to be tonal, impulsive, intermittent or to have other sound characteristics that are readily distinctive against the residual acoustic environment, BS4142:2014 advises that penalties be applied to the specific level to arrive at the rating level.

Based upon measured day and night-time background sound levels on the site, appropriate plant noise criteria to nearby dwelling facades (including those proposed as part of this development) are as follows:

- Daytime (07:00 to 23:00hrs) 40 dB $L_{Aeq,1hr}$
- Night-time (23:00 to 07:00hrs) 35 dB $L_{Aeq,15-min}$

Plant noise emissions should not contain any characteristics that would warrant any acoustic feature penalties under the BS 4142:2014 assessment procedure.

7 CONCLUSIONS

RSK Ireland Limited (RSK) was instructed by Clear Real Estate Holdings Limited to conduct a noise impact assessment and Acoustic Design Statement (ADS) in respect of the proposed Residential Development at Adamstown, Clonburris, Co. Dublin. This report has been prepared following a request for an assessment to address the impact of the existing noise sources on the proposed development.

Baseline noise measurements were conducted, in accordance with ISO 1996-2:2017, by RSK in January 2023. In conducting this review, reference is made to industry standard guidance including *The Professional Guidance on Planning & Noise (ProPG)*, May 2017, BS 8233: 2014 *Guidance on sound insulation and noise reduction for buildings* (as referenced in the SDCC NAP) and BS 4142:2014+A1:2019 *Methods for rating and assessing industrial and commercial sound*.

The site noise survey has been used to assess the sites noise risk categories, as per the ProPG “Stage 1” assessment. The ProPG noise risk categories for the facades most exposed to road traffic noise are as follows:

Daytime: Low to Medium Night-time Medium

Recommendations to mitigate noise emissions, as specified in the “Stage 2” Acoustic Design Statement, include the following:

- Provision of glazing with the minimum sound insulation properties as outlined below:

Table 12 Glazing Acoustic Specification (Ref. Figure 9)

Specification (Ref. Figure 9)	Sound Reduction Performance Requirements (dB) in Octave Frequency Bands (Hz)						Overall dB R_w
	125	250	500	1k	2k	4k	
Zone A (Red)	29	32	41	40	41	55	41
All other facades	21	20	31	37	35	40	34

- Provision of acoustic attenuation to ventilation systems to all Living rooms and Bedrooms in Zone A, whereby a minimum acoustic performance of 41 dB $D_{ne,w}$ shall be provided, with the vent in the open position.

In addition to the above, noise criteria for building services plant, should any be required to service the proposed new development, has been set in accordance with BS 4142:2014+A1:2019 and with consideration of the measured baseline noise levels at the site boundary.

In summary, it is considered that the site is suitable for a residential development, subject to the provision of the noise control recommendations as outlined in this report.

APPENDIX A

SERVICE CONSTRAINTS

RSK ENVIRONMENT LIMITED SERVICE CONSTRAINTS

1. This report (the "Services") was compiled and carried out by RSK Ireland Limited (RSK) for Clear Real Estate Holdings Limited (the "client") in accordance with the terms of a contract between RSK and the "client". The Services were performed by RSK with the skill and care ordinarily exercised by a reasonable environmental consultant at the time the Services were performed. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the client.
2. Other than that expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services.
3. Unless otherwise agreed the Services were performed by RSK exclusively for the purposes of the client. RSK is not aware of any interest of or reliance by any party other than the client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent or condone any party other than the client relying upon the Services. Should this report or any part of this report, or otherwise details of the Services or any part of the Services be made known to any such party, and such party relies thereon that party does so wholly at its own and sole risk and RSK disclaims any liability to such parties. **Any such party would be** well advised to seek independent advice from a competent environmental consultant and/or lawyer.
4. It is RSK's understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the report is used, or the proposed use of the site change, this report may no longer be valid and any further use of or reliance upon the report in those circumstances by the client without RSK's review and advice shall be at the client's sole and own risk. Should RSK be requested to review the report after the date hereof, RSK shall be entitled to additional payment at the then existing rates or such other terms as agreed between RSK and the client.
5. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the report in the future shall be at the client's own and sole risk. Should RSK be requested to review the report in the future, RSK shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between RSK and the client.
6. The observations and conclusions described in this report are based solely upon the Services which were provided pursuant to the agreement between the client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out or required by the contract between the client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services.
7. The Services are based upon RSK's observations of existing physical conditions at the Site gained from a walk-over survey of the site together with RSK's interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The Services are also based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely. The Services clearly are limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the walk-over survey. Further RSK was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the Services. RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK and including the doing of any independent investigation of the information provided to RSK save as otherwise provided in the terms of the contract between the client and RSK.
8. Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan, but is (are) used to present the general relative locations of features on, and surrounding, the site.